

**Technical Manual Insert**

**for**

**NAVSHIPS 362-2189  
WESTINGHOUSE T.M. 32-855-3C1**

**ADDITIONAL  
MAINTENANCE INSTRUCTIONS**

**for**

**NAVY TYPE ACB-1600HR  
CIRCUIT BREAKER**

**WESTINGHOUSE TYPE DBN-1016**



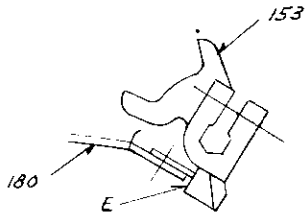
**WESTINGHOUSE ELECTRIC CORPORATION  
EAST PITTSBURGH, PA., U.S.A.**

**TECHNICAL MANUAL 32-855-11C1**

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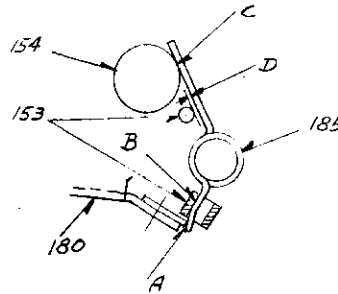
# CIRCUIT BREAKER

WARNING - CHECK WITH BREAKER OPEN



RESETTING

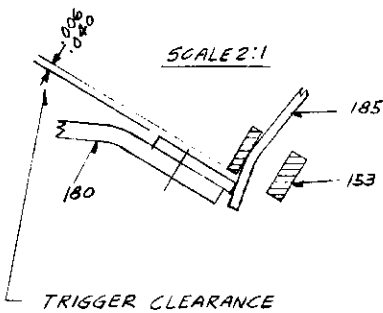
CHECK TO SEE IF TRIGGER (180) WILL RESET FROM THIS POSITION AND IF NECESSARY CLEAN AND REMOVE BURRS FROM SURFACE "E" ON LATCH (153)



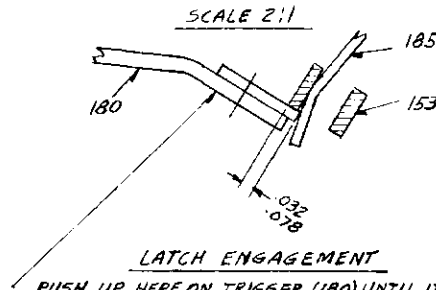
LATCH POSITION

WITH TRIGGER (180) TOUCHING SPRING (185) ON SURFACE "A" AND WITH SPRING (185) TOUCHING LATCH (153) ON SURFACE "B" THEN IF NECESSARY BEND UPPER END OF SPRING SO THAT SPRING

1. TOUCHES PIN (154) AT "C"
2. AND HAS ZERO TO .016 INCH CLEARANCE TO PIN PROJECTION OF LATCH (153) AT "D"



BEND END OF TRIGGER (180) IF NECESSARY TO ADJUST IF CLEARANCE IS LESS THAN .006 DO NOT BEND IF OVER .040 BUT CONTACT MANUFACTURERS REPRESENTATIVE



PUSH UP HERE ON TRIGGER (180) UNTIL IT TOUCHES LATCH (153) CHECK DIMENSION AND BEND END OF SPRING (185) IF NECESSARY

LEGEND

- 153 LATCH
- 154 PIN
- 180 TRIGGER
- 185 SPRING

304 8531  
304C 398  
Fig. 1 - Mechanism Latch Adjustment



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## ADDITIONAL MAINTENANCE INSTRUCTIONS NAVY TYPE ACB 1600HR

This insert was prepared to provide additional checking and adjustment instructions for coolant pump breakers where reliable closing is extremely important.

Technical manual NavShips 362-2189 covers general maintenance, but this manual was prepared to stress and add the following:

1. Mounting hardware and locking devices should be inspected and if required, tightened at least once a year.

2. Tru-arc ring retainers have proven reliable over many years of service. However, several precautions should be taken when replacing a Tru-arc ring on a pin.

a. If old ring is distorted by removal, obtain new Tru-arc ring from on-board repair parts.

b. If groove on pin is dirty, clean with wire brush before reassembly.

c. Install Tru-arc rings with sharp edge facing end of pin. Note that manufacturing dulls or rounds one edge of ring and leaves the other edge sharp.

3. The failure of a breaker to close can be the result of operating errors or a variety of equipment deficiencies. The problem of correction is usually apparent if failure is consistent. The following list attempts to help the personnel involved locate the trouble when the failures occur infrequently.

a. If personnel suspects that breaker relay was not energized, that is no clicking sound from relay, then look for:

1. Open interlock switch or external relay not functioning.

2. Loss of control power.

b. If personnel suspects breaker relay was energized, but that closing solenoid was not energized, look for:

1. Relay deficiencies which might prevent relay latch (229) Figure 1-2-4 from engaging pin (230). Binding of latch (229), trip crank (220), spring (221), or pin (201) could cause this.

2. Relay deficiencies which might allow latch (229) to slide off pin (230). A worn hook on latch (229) or non-functioning spring (225) could cause this.

3. Relay contacts not making due to lack of adjustment per Figure 5-2-1.

c. If personnel hears breaker solenoid move, but suspects that main contact arms of pole units did not move, then look for:

1. Failure of trip bar to reset, insufficient latch engagement, incorrect trigger clearance, or faulty latch position. See Figure 1 of this insert for details of inspection and correction.

2. Failure to completely place breaker in cell, so that cell interlock holds trip bar up.

3. Electric lockout not energized or not functioning. Lockout should be energized at least 1/4 second before breaker relay.

4. Manual trip sticking and holding trip bar up.

## CIRCUIT BREAKER

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5. Overcurrent trips failing to re-set after previous operation.
- d. If personnel notes that breaker contacts closed or touched, but that breaker did not remain closed, then look for:
1. Insufficient latch engagement, incorrect trigger clearance or faulty latch position. See Figure 1 for details.
  2. Any device which might hold trip bar in partially tripped position.
  3. High inrush currents or faulty overcurrent trips.
  4. Breaker "relay release" tripping relay contacts free too soon. To check, draw breaker out on rails and close slowly with manual handle. The "relay release" (Figure 1-2-5) should raise relay pin (201) just before or at same time that breaker latches closed.
  5. Friction preventing PAWL (164) Figure 1-2-3 from latching under Pin (177).
6. Premature de-energization of relay coil due to external interlocks and relays.
4. There is no set dimension or adjustment of cell interlock trip (Figure 1-2-1). The gap between lever unit (143) and trip bar (148) is adjusted between these limits.
    - a. The gap must be small enough to insure that depressing lever handle (144) will trip breaker before extension rails can be lowered.
    - b. The gap must be large enough to insure that depressing lever handle (144) until stop pin (145) rest on bottom of hole in breaker frame will not damage trip bar (148) by permanently distorting it.
  5. The overcurrent trip screw setting is controlled by screw in trip crank (351) (Figure 1-2-10).
    - a. Adjust gap between screw and trip finger on breaker until raising of armatures (314), (338) and (330) barely trip breaker.
    - b. From this position turn screw (153) 1-1/2 turns in direction to shorten gap.